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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,288	02/26/2004	Brig Barnum Elliott	03-4037	3992

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EXAMINER	
NGUYEN, TUAN HOANG	
ART UNIT	**PAPER NUMBER**
2618	

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/786,288	ELLIOTT, BRIG BARNUM	
	Examiner	Art Unit	
	Tuan H. Nguyen	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/26/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 02/26/2004 has been considered by Examiner and made of record in the application file.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, 8-11, 15-16, 20-21, 24, 26-27, 34, and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell Jr (US PUB. 2005/0215280 hereinafter, "Twitchell") in view of Krantz et al. (U.S PUB. 2006/0107081 hereinafter, "Krantz").

Consider claims 1 and 34, Twitchell teaches for a given node to join an ad hoc network of a plurality of energy-conserving nodes, comprising: transmitting a wake-up signal (page 6 [0057]).

Twitchell does not explicitly show that receiving a message from one of the energy-conserving nodes in the network, the message including information sufficient for the given node to determine how to join the network; and joining the network using the information.

In the same field of endeavor, Krantz teaches receiving a message from one of the energy-conserving nodes in the network, the message including information sufficient for the given node to determine how to join the network (page 5 [0041]); and joining the network using the information (page 5 [0041]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, receiving a message from one of the energy-conserving nodes in the network, the message including information sufficient for the given node to determine how to join the network; and joining the network using the information, as taught by Krantz, in order to provide for managing power in a network interface module in a computing device.

Consider claim 2, Twitchell further teaches the transmitting comprises: powering on a bellringer transmitter (page 1 [0009]), transmitting a wake-up signal (page 6 [0057]), and powering off the bellringer transmitter (page 1 [0009]).

Consider claim 3, Twitchell further teaches the receiving comprises: Powering on a main transceiver (page 3 [0029]); waiting to receive the message from the one of the energy-conserving nodes, and receiving the message from the one of the energy-

conserving nodes, the message including information Consider a time when at least one node of the energy-conserving nodes is available to receive messages (page 4 [0033]).

Consider claim 8, Twitchell further teaches receiving, by the one of the energy-conserving nodes, the wake-up signal (page 14 [0133]); and transmitting the message, by the one of the energy-conserving nodes, responsive to receiving the wake-up signal (page 8 [0071]).

Consider claim 9, Twitchell further teaches waiting a random time interval, by the one of the energy-conserving nodes, before transmitting the message (page 12 [0114]).

Consider claim 10, Twitchell further teaches waiting a deterministic time interval, by the one of the energy-conserving nodes, before transmitting the message (page 12 [0114]).

Consider claim 11, Twitchell further teaches determining, after the one of the energy-conserving nodes receives the wake-up signal, whether the one of the energy conserving nodes is to respond to the wake-up signal (page 2 [0010]), wherein the one of the energy-conserving nodes performs the transmitting of the message only when the one of the energy-conserving nodes determines that the one of the energy-conserving nodes is to respond to the wake-up signal (page 8 [0071]).

Consider claim 15, Twitchell further teaches the determining whether the one of the energy-conserving nodes is to respond is based on one or more certain periods in which the one of the energy-conserving nodes is permitted to respond (page 5 [0050]).

Consider claim 16, Twitchell further teaches the message comprises times when one or more of the energy-conserving nodes are available to receive data and corresponding channels on which the one or more of the energy-conserving nodes are to receive at the times (page 5 [0051]).

Consider claim 20, Twitchell teaches a node configured to operate in an energy-conserving ad hoc network, the node comprising: a transceiver configured to send and receive data messages (page 4 [0039]); a transmitter configured to transmit a wake-up signal; and processing logic configured to control operation of the transceiver and the transmitter (page 6 [0057]), wherein the processing logic is further configured to: transmit the wake-up signal via the transmitter (page 6 [0057]).

Twitchell does not explicitly show that receive a network entry message from one of a plurality of existing nodes in the network, the network entry message including scheduled times in which at least one of the existing nodes in the network is available to receive, and join the network using the scheduled times.

In the same field of endeavor, Krantz teaches receive a network entry message from one of a plurality of existing nodes in the network, the network entry message including scheduled times in which at least one of the existing nodes in the network is

available to receive (page 5 [0041]), and join the network using the scheduled times (page 5 [0041]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, receive a network entry message from one of a plurality of existing nodes in the network, the network entry message including scheduled times in which at least one of the existing nodes in the network is available to receive, and join the network using the scheduled times, as taught by Krantz, in order to provide for managing power in a network interface module in a computing device.

Consider claim 21, Krantz further teaches the processing logic is further configured to: turn off the transmitter after transmitting the wake-up signal, and turn on the transceiver (page 4 [0038]).

Consider claim 24, Twitchell further teaches a bellringer receiver, wherein the processing logic is further configured to cause the node to function as an existing network node after joining the network, when functioning as an existing network node, the processing logic is further configured to: receive, via the bellringer receiver, a wake up signal transmitted by another node (page 15 [0149]), wait a random time interval (page 1 [0009]), power on the transceiver (page 3 [0029]), transmit the network entry message via the transceiver (page 12 [0114]), and power off the transceiver (page 1 [0009]).

Consider claim 26, Twitchell teaches a machine-readable medium having instructions recorded thereon for at least one processor of a node, when the instructions are executed by the at least one processor, the at least one processor is configured to: transmit a wake-up signal when the node intends to join a network (page 6 [0057]).

Twitchell does not explicitly show that receiving a network entry message from an existing node in the network, the message including information Consider availability of at least one network node for receiving a message from the node, and join the network based on the information included in the network entry message.

In the same field of endeavor, Krantz teaches receiving a network entry message from an existing node in the network, the message including information Consider availability of at least one network node for receiving a message from the node (page 5 [0041]), and join the network based on the information included in the network entry message (page 5 [0041]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, receiving a network entry message from an existing node in the network, the message including information Consider availability of at least one network node for receiving a message from the node, and join the network based on the information included in the network entry message, as taught by Krantz, in order to provide for managing power in a network interface module in a computing device.

Consider claim 27, Twitchell further teaches when the instructions are executed by the at least one processor, the at least one processor is further configured to: turn on a transmitter before the transmitting of the wake-up signal (page 6 [0059]), and turn off the transmitter after the transmitting of the wake-up signal (page 6 [0059]).

Consider claim 37, Twitchell teaches a node in an ad hoc network, comprising: a processor configured to: transmit a first wake-up signal (page 6 [0057]), receive a message from a neighboring node, the message identifying one or more time periods during which the neighboring node is available to receive (page 5 [0050]), store the one or more time periods from the message in the memory, receive a second wake-up signal from a different node (page 7 [0066]), and transmit a message to the different node, the message including at least the one or more time periods during which the node is available to receive (page 5 [0050]).

Twitchell does not explicitly show that a memory configured to store one or more time periods during which the node is available to receive.

In the same field of endeavor, Krantz teaches a memory configured to store one or more time periods during which the node is available to receive (page 4 [0033]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, receiving a message from one of the energy-conserving nodes in the network, the message including information sufficient for the given node to determine how to join the network; and joining the network using the

information, as taught by Krantz, in order to provide for managing power in a network interface module in a computing device.

Consider claim 38, Twitchell further teaches the message transmitted to the different node further includes the one or more time periods during which the neighboring node is available to receive (page 5 [0050]).

4. Claims 4-6, 12-14, 22-23, 25, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell Jr (US PUB. 2005/0215280 hereinafter, "Twitchell") in view of Krantz et al. (U.S PUB. 2006/0107081 hereinafter, "Krantz"), and further in view of Balachandran et al. (U.S PUB. 2004/0230638 hereinafter, "Balachandran").

Consider claim 4, Twitchell and Krantz, in combination, fails to teaches retransmitting the wake-up signal when a message is not received during a predefined time period.

However, Balachandran teaches retransmitting the wake-up signal when a message is not received during a predefined time period (page 1 [0007]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Balachandran into view of Twitchell and Krantz, in order to provide scheduling the awakening of nodes and for adaptively setting sleep periods of nodes in a synchronous multiple node ad-hoc network.

Consider claim 5, Balachandran further teaches setting the time period to a variable value (page 1 [0007]).

Consider claim 6, Balachandran further teaches setting the time period to a fixed value (page 1 [0007]).

Consider claim 12, Balachandran further teaches the determining whether the one of the energy-conserving nodes is to respond is a random decision (page 2 [0022]).

Consider claim 13, Balachandran further teaches the determining whether the one of the energy-conserving nodes is to respond is based on a received signal strength of the wake-up signal (page 2 [0011]).

Consider claim 14, Balachandran further teaches the determining whether the one of the energy-conserving nodes is to respond is based on an understanding of a current network density from a point of view of the one of the energy-conserving nodes (page 3 [0028]).

Consider claim 22, Balachandran further teaches the processing logic is further configured to: wait for reception of the network entry message after transmitting the wake-up signal (page 1 [0007]), and when a time limit is exceeded before receiving the network entry message, turn off the transceiver, wait a duration of a first time interval,

turn on the transmitter (page 2 [0022]), and retransmit the wake-up signal (page 1 [0007]).

Consider claim 23, Balachandran further teaches the first time interval is a variable interval and the processing logic is further configured to: increase a length of the first time interval as a number of failed network joining attempts for the node increases (page 2 [0011]).

Consider claim 25, Balachandran further teaches the node functions as an existing node, the processing logic is further configured to: determine whether to respond to the received wake-up signal based on one of a random decision (page 2 [0022]), a received signal strength of the wake-up signal (page 2 [0011]), a current density of the network from a point of view of the node (page 3 [0028]), and one or more certain time periods during which the node is configured to respond to the received wake-up signal (page 2 [0011]).

Consider claim 35, Balachandran further teaches the receiving comprises: waiting a duration of a first time interval when the network entry message is not received after a predetermined time limit .

5. Claims 7, 28-29, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell Jr (US PUB. 2005/0215280 hereinafter, "Twitchell") in view

of Krantz et al. (U.S PUB. 2006/0107081 hereinafter, "Krantz"), and Balachandran et al. (U.S PUB. 2004/0230638 hereinafter, "Balachandran"), and further in view of Bahl et al. (U.S PUB. 2004/0218580 hereinafter, "Bahl").

Consider claim 7, Twitchell, Krantz, and Balachandran in combination, fails to teaches setting the time period to a relatively small value, and increasing a value of the time period as a number of failed network joining attempts increases.

However, Bahl teaches setting the time period to a relatively small value (page 6 [0050]), and increasing a value of the time period as a number of failed network joining attempts increases (page 6 [0052]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Bahl into view of Twitchell, Krantz, and Balachandran, in order to provide a system and method for devices to concurrently connect to multiple networks and be synchronized during the time in which the devices stay in an ad hoc network.

Consider claim 28, Bahl further teaches the at least one processor is further configured to: when the receiving of the entry message fails to occur during a predetermined time limit: wait for a duration of a first time interval (page 6 [0050]), and transmit the wake-up signal (page 6 [0052]).

Consider claim 29, Bahl further teaches the first time interval is a variable time interval and the at least one processor is further configured to:
set the first time interval to a relatively small value (page 6 [0050]), and increase the value of the first time interval as a number of failed network joining attempts increases (page 6 [0052]).

Consider claim 36, Bahl further teaches for waiting a duration of a first time interval comprises: means for setting the first time interval (page 6 [0050]), and means for increasing the first time interval as a number of failed network joining attempts increases for the node (page 6 [0052]).

6. Claims 17-18 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell Jr (US PUB. 2005/0215280 hereinafter, "Twitchell") in view of Garcia-Luna-Aceves et al. (U.S PUB. 2002/0067736 hereinafter, "Garcia").

Consider claim 17, Twitchell teaches energy-conserving ad hoc network including a plurality of nodes, each of the nodes comprising: a transceiver configured to receive and transmit data messages (page 4 [0039]); processing logic (page 5 [0046]); a memory configured to store a schedule of reception times (page 9 [0079]); and responsive to the receiving of the wake-up signal, transmit, via the transceiver, a message including the schedule of reception times (page 12 [0114]), when the node is a node joining the network (page 10 [0095]), the processing logic is configured to: transmit the wake-up signal (page 6 [0057]), receive the message from an existing one

of the nodes in the network (page 15 [0149]), and join the network based on the message (page 10 [0095]).

Twitchell does not explicitly show that a bellringer transmitter; and a bellringer receiver, wherein: when the node is an existing node in the network, the processing logic is configured to: receive a wake-up signal via the bellringer receiver.

In the same field of endeavor, Garcia teaches a bellringer transmitter (page 4 [0065]); and a bellringer receiver (page 4 [0065]), wherein: when the node is an existing node in the network, the processing logic is configured to: receive a wake-up signal via the bellringer receiver (page 4 [0065]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, a bellringer transmitter; and a bellringer receiver, wherein: when the node is an existing node in the network, the processing logic is configured to: receive a wake-up signal via the bellringer receiver, as taught by Garcia, in order to provide for distributed election of a shared transmission schedule within an ad-hoc network.

Consider claim 18, Twitchell further teaches when the node is an existing node, the processing logic of the node is further configured to wait a random time interval before responding to the wake-up signal (page 5 [0050]).

Consider claim 30, Twitchell teaches a machine-readable medium having instructions recorded thereon for at least one processor of a node, when the instructions

are executed by the at least one processor, the at least one processor is configured to: and responsive to the receiving of the wake-up signal (page 12 [0114]), transmit a network entry message including scheduled times in which one or more of existing network nodes are available to receive (page 15 [0149]).

Twitchell does not explicitly show that receive a wake-up signal via a bellringer receiver.

In the same field of endeavor, Garcia teaches receive a wake-up signal via a bellringer receiver (page 6 [0096]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use, receive a wake-up signal via a bellringer receiver, as taught by Garcia, in order to provide for distributed election of a shared transmission schedule within an ad-hoc network.

Consider claim 31, Twitchell further teaches the at least one processor is further configured to: wait a random time interval before transmitting the network entry message (page 5 [0050]).

Consider claim 32, Twitchell further teaches the at least one processor is further configured to: after receiving the wake-up signal, determine whether to respond to the wake-up signal (page 12 [0114]).

7. Claims 19 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twitchell Jr (US PUB. 2005/0215280 hereinafter, "Twitchell") in view of Garcia-Luna-Aceves et al. (U.S PUB. 2002/0067736 hereinafter, "Garcia"), and further in view of Balachandran et al. (U.S PUB. 2004/0230638 hereinafter, "Balachandran").

Consider claim 19, Twitchell and Garcia, in combination, fails to teaches when the node is an existing node, the processing logic further is configured to determine whether to respond to the received wake-up signal based on one of a random decision, a received signal strength of the wake-up signal, a current density of the network from a point of view of the existing node, and one or more certain time periods during which the existing node is configured to respond to the received wake-up signal.

However, Balachandran teaches when the node is an existing node, the processing logic further is configured to determine whether to respond to the received wake-up signal based on one of a random decision (page 2 [0022]), a received signal strength of the wake-up signal (page 2 [0011]), a current density of the network from a point of view of the existing node (page 3 [0028]), and one or more certain time periods during which the existing node is configured to respond to the received wake-up signal (page 2 [0022]).

Therefore, it is obvious to one of ordinary skill in the art at the time the invention was made to incorporate the disclosing of Balachandran into view of Twitchell and Garcia, in order to provide scheduling the awakening of nodes and for adaptively setting sleep periods of nodes in a synchronous multiple node ad-hoc network.

Consider claim 33, Balachandran further teaches the determining whether to respond is based on one of a random decision (page 2 [0022]), a received signal strength of the wake up signal, a current density of the network from a point of view of the node (page 2 [0011]), and one or more certain time periods during which the node is configured to respond to the received wake-up signal (page 2 [0022]).

Conclusion

8. Any response to this action should be mailed to:

Mail Stop_____ (Explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is (571) 272-8329. The examiner can normally be reached on 8:00Am - 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Maung Nay A. can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information Consider the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T.N

Tuan Nguyen
Examiner
Art Unit 2618

Quochien Ba Vuong 9/5/06

QUOCHIEN B. VUONG
PRIMARY EXAMINER